Advances in Social Science, Education and Humanities Research (ASSEHR), volume 304
4th ASEAN Conference on Psychology, Counselling, and Humanities (ACPCH 2018)

Development of Measurement Tool of Smartphone-Addicted Indication for Middle-Aged Children

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Abstract. *This study is aimed to develop a measurement tool to assess daily behaviour exhibited by children related to their interactions with smartphone. Variable used in this study is the smartphone-addicted indication. The concept of addiction to smartphone is based on several factors, such as daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, excessive use, and tolerance. The research subjects involved in this study were seven to thirteen-year-old students. The number of respondents participated in this study consisted of 145 children including 75 boys and 70 girls. The result of the data analysis of 36 items shows the value of reliability trough Cronbach's Alpha is 0.943. The validity test is conducted through qualitative evaluation of 5 items expert judges declaring validity in appearance and content, and supported by discriminant item validity through Corrected Item Total Correlation of all items above 0.3. Thus, the measurement instrument of smartphone-addicted indication can be valid and reliable to be used.*

Keyword: Smartphone-addicted indication, children

Introduction

Smartphone has been defined as an important device used by people in their daily activities. There are a lot of benefits offered by smartphone, namely accelerating and facilitating information, ordering goods and services, entertaining through social media and games and relieving stress. As the two sides of the coin, there are both positive and negative effects provided by it. Nevertheless, its various benefits may lead to distraction, exclusively on social and motoric aspects, and it is even more affect children's intelligence because of reluctance to learn and read. Moreover, this gadget can influence one's emotional maturity and ability (consideration, reasoning) for decision making (Mamatha, Hanakeri, & Aminabhavi, 2016).

Based on data from TechinAsia (Millward, 2014), Indonesia will surpass 100 million active smartphone users by 2018, becoming the world's fourth largest smartphone user population (following China, India and The United States). The shown data state that Indonesians convey high enthusiasm for smartphone use.

Google Indonesia (Nistanto, 2015) has conducted a survey revealing that average people in Indonesia spend 5.5 hours per day staring at their smartphone screens. This fact is also supported by Indonesian Internet Service Providers Association (APJII) explaining that most people access internet by their smartphone for more than six hours a day (Damar, 2017). It can be probably to grow higher along with the development of smartphone services and applications. The heavier use of smartphone will certainly provide an impact on the daily lives.

In addition to the growing use of gadgets, another thing that becomes a problem is related to the expansion of age users. Nowadays, the number of child users is much more considerable. The survey taken from Lookout Mobile Security shows that 52% of children access gadgets at home. Most of them use smartphones with a percentage of 41%, while iPod 21%, and tablets 8% (Pratama, 2015). Furthermore, it is explained the large percentage of smartphone use, more than other gadgets, shows that children lend these devices from their parents. However, some parents do not realize that smartphone use in children on their daily life may deliver serious impact in the future. Another shocking result mentions that children from age 5 to 8 years have the largest percentage of more than a half, 52%, followed by 2 to 4-year-old- children accounting for 39%, and 12-month-old-children making of 10% (Pratama, 2015).

The wide-ranging use of digital devices in children becomes a dilemma for parents. This is due to new trend in the community affects children to use, and even to have personal smartphone that can be used at any time. Most parents may feel benefited by the existence of smartphone which make children calmer and comfortable. On the other hand, there are anxieties given by the excessive use of gadgets; social interaction, health disorder, and others.

The phenomenon of amassed use of mobile phones can be discussed through environmental psychology theory called ecological theory. The problem of using gadgets in children is related to environmental system in which the children live. The concern is that the determinant use of gadgets is resulted from the influence of micro systems, especially parents as their close family environment.

In this study, the researchers aim to develop a measurement instrument for smartphone-addicted

indications for middle-aged children, which can be used to assess their daily behaviour and interactions with smartphone. Through the assessment of smartphone-addicted indication, parents can be more aware of technological developments and its effects on children. Furthermore, this study can be maximized as a reference for reducing behaviour and developing fun activities rather than frequent use of gadgets.

Literature Review

The definitions of addiction in the dictionary are: (1) abnormal body functions caused by food or drug toxins; (2) pathological conditions that cannot be tolerated due to the use of alcohol or drugs consumed continuously; and (3) circumstances cannot judge or distinguish rationally an idea or object. Furthermore, addiction is a phenomenon that manifests tolerance, symptoms of withdrawal, and dependence accompanied by social problems. The term was used to be limited to drugs or substances, but it was also applied to gambling, internet, games, smartphone use, and other addictive behaviours (Kwon, Lee, Won, Park, Min, Hahn, Gu, Choi, & Kim, 2013).

There are six factors revealed based on smartphone-addicted behaviour from Kwon, et al. (2013). (a) Daily-life disturbance: including not implementing planned work, facing difficulty to concentrate in class or at work, experiencing dizziness or blurred vision, experiencing pain in the wrist or behind the neck, and sleeping disorder. Spending a lot of time in using smartphones may deliver pain in the wrists, back of neck, eyes, head, and so on; (b) Positive anticipation: smartphone is not only used for a phone call and game playing device, but also a tool that creates feelings of pleasure, reduces fatigue and anxiety, makes one feel safe, and gets rid of stress and feels alone; (c) Withdrawal: It is a reaction of impatience, anxiety, and intolerance without smartphone, constantly imagining it in mind even when smartphone is not used, never giving up on using it, and feeling annoyed when disturbed in time of its use. (d) Cyberspace-oriented relationship: It is a feeling that relationship with friends obtained through smartphone is more intimate than a relationship with a friend through social interaction in real world, experiencing an uncontrolled feeling of loss when individual is unable to use a smartphone and consequently, one will constantly check his/her cell phone. Smartphone world is a real community for its users or a community formed by social networking sites such as Twitter or Facebook; (e) Excessive use: It refers to uncontrolled smartphone usage, preferring to do a search using a smartphone when asking help from others, always preparing a battery charging package, and feeling the urge to use smartphone regularly after stopping for a moment; (f) Tolerance: It is defined as frequent effort to control smartphone use but constantly failing to do so.

Environment has a profound influence on the use of gadgets, not only for children as users, but also for parents. This is because parents are benefited when accommodating their children with a smartphone, so that the children are no longer interfered with the affairs of parents for their focus on gadgets.

Certainly, permitting children to use gadgets will cause concern for some parents. Unfortunately, the environment has made children convenience with the use of gadgets and it can be difficult to prevent. The drawbacks of gadget for children cover some consequences, such as smartphone addict, physical problems (especially related to eye), academic decline, lack of social skills, and so forth. However, there are some advantages that can be gained from the use of smartphones, such facilitating information, helping children to learn, and entertaining them.

Both favourable and unfavourable impacts of smartphone use should be the focus of parents. The role of parents becomes vitally important in educating and controlling children growth and development since they experience various characteristics and developmental tasks in each phase of childhood. Therefore, parents need to understand the extent of children development stages and provide appropriate attention related to the use of smartphone. Parents are not supposed to generalize or look down on this serious matter for the reasons aforementioned.

The use of gadget in children, especially in early and middle childhood period is undesirable as children have incomplete understanding and self-awareness in this phase. Based on Piaget's cognitive development stage (in Santrock, 2011), 2 to 7-year-old-children enter pre-operational stage; they develop an understanding of the world by words and images that reflect symbolic improvement and relationship of sensory information and physical action. Meanwhile, in the age of 7 to 11, children turn in concrete operational phase in which they begin to reason logically, but it is limited to things that are concrete. It can be said that children under 11 years old need a process of learning / cognitive development through direct learning with real objects. Whereas, in the excessive use of gadgets, these children will experience difficulties in understanding reality since what they obtain from smartphones is unable to provide sufficient sensory experience.

Another issue associated to the use of gadgets in children is related to near to the ground social ability, being less concerned about the environment. This is because children are too busy in operating their gadgets rather than developing social skill that requires them to experience it as personal.

Method

The research subjects of this study were seven to thirteen-year-old students. This study was conducted in quantitative research so as to examine certain populations or samples. The data were collected through research instruments and were analysed quantitatively. The variables measured in the study were smartphone-addicted. The concept of smartphone addiction is based on some factors, namely daily-life disturbance, positive

anticipation, withdrawal, cyberspace-oriented relationship, excessive use, and tolerance.

The questionnaires were distributed with rating scale format in order to obtain the data. The rating scale model was Likert scale with alternative response statements of five scales, namely: Strongly Agree (SS); Agree (S); Neither Agree nor Disagree (N); Disagree (TS); and Strongly Disagree (STS). The number of measuring items for smartphone-addicted indication were encompassed of 36 items.

Results

Description of research subjects.

The obtained description of sociodemographic data as the result of research samples on 145 students.

Validity and reliability test results for mobile phone addiction indications

The tool for measuring smartphone-addicted indications are developed by researchers based on six factors of smartphone addiction behaviour from Kwon, et al. (2013), namely daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, excessive use, and tolerance. The result has shown that the reliability value through Cronbach's Alpha is 0.943 with discriminant items ranging from 0.305 to 0.685.

Validity test of the content of measurement instrument for smartphone addiction is done by asking for a qualitative evaluation of the items from 5 Psychology lecturers at University of Muhammadiyah Malang. The results of the assessments have stated that the items are valid in terms of appearance and content, and it is supported by qualified value of discriminant item validity, known from score of Corrected Item-Total Correlation of all items above 0.3. Therefore, this measurement of smartphone-addicted indication is valid and reliable to use. The followings are validity and reliability data for smartphone-addicted indication

Discussion

There are 145 children recruited to participate in this study, consisting of 75 boys (52%) and 70 girls (48%). The age ranges are from 8 to 13 years old. Based on the results of questionnaires there are 100 children (69%) have their own smartphones and 43 children (29.7%) borrow smartphones from others (parents, relatives, or shared property with their siblings).

The subjects use smartphones for different time of period; 67 children (46.2%) state that they use smartphones for less than 1 hour, 39 children (26.9%) use mobile for 1-2 hours per day, and 22 children (15.2%) used smartphones for 3-4 hours per day. The least population of 12 children (8.3%) are suffering from smartphone addiction for the reason that they spend beyond 5 hours per day on smartphones.

More than half of the participants, 97 children (66.9%) use smartphone to play games. Roughly, one third of them, 46 children (31.7%) watch videos both from the mobile gallery and from streaming sites such as YouTube, accessing social networking sites and messaging apps, such as Whatsapp, Line, Instagram, surfing on search engine (find out something via Google), making a call, and so on.

Based on the interest of playing games, there are 126 children (86.9%) are fond of playing games. Then, there are only 18 children (12%) who are unlikely to play games through smartphone. Moreover, online games are the most dominant one played by 79 children (54.5%) and followed by 45 children (31%) choose offline game and 12 children (8.3%) play games online and offline game.

Conclusion

The results of the data analysis of smartphone-addicted indication measuring instrument consisted of 36 items shows that the reliability value through Cronbach's Alpha is 0.943. Validity test is carried out through qualitative evaluation of items done by 5 experts stating that validity in appearance and content, and supported by discriminant item validity through Corrected Item-Total Correlation is above 0.3. Thus, this measurement of smartphone-addicted indication is valid and reliable to use. For the future research, it is suggested to do Further analysis by using the EFA method (exploratory factor analysis) and CFA method (confirmatory factor analysis). The researchers also suggest for Grouping norms or making categorization of smartphone-addicted level.

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